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10/602,623	06/25/2003	Shigeki Watanabe	1837.1002	8995

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EXAMINER

LEUNG, CHRISTINA Y

ART UNIT	PAPER NUMBER
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2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/602,623

Applicant(s)

WATANABE, SHIGEKI

Examiner

Christina Y. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-29 is/are allowed.
- 6) ☒ Claim(s) 30-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings were received on 18 December 2006. These drawings are acceptable.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 30, 31, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe (US 2001/0013965 A1).

For clarification, since another rejection in this Office action relies on a different reference that may be also called “Watanabe,” the reference in this rejection under 35 U.S.C. 102(b), US 2001/0013965 A1, is referred to throughout this Office action as “Watanabe ’965.”

Regarding claim 30, Watanabe ’965 discloses a method of processing an optical signal (Figure 8; page 5, paragraphs [0068]-[0070]), comprising:

inputting signal light into a first nonlinear optical medium (optical fiber 22) to broaden a spectrum of the signal light through self phase modulation occurring in the first nonlinear optical medium, thereby obtaining first spectrally broadened light (pages 5-6, paragraphs [0078] and [0080]);

compensating for chromatic dispersion effected on the first spectrally broadened light obtained in the inputting (using optical fiber 24; page 6, paragraphs [0079] and [0081]); and

inputting only the first spectrally broadened light processed by the compensating into a second nonlinear optical medium (optical fiber 2) to broaden a spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium, thereby obtaining second spectrally broadened light (page 5, paragraph [0078]).

Regarding claim 31, as similarly discussed above with regard to claim 30, Watanabe '965 discloses a device for processing an optical signal (Figure 8; page 5, paragraphs [0068]-[0070]), comprising:

a first nonlinear optical medium (optical fiber 22) for inputting signal light to broaden a spectrum of the signal light through self phase modulation occurring in the first nonlinear optical medium, thereby obtaining first spectrally broadened light (pages 5-6, paragraphs [0078] and [0080]);

a dispersion compensator (optical fiber 24) for compensating for chromatic dispersion effected on the first spectrally broadened light obtained by the first nonlinear optical medium (page 6, paragraphs [0079] and [0081]); and

a second nonlinear optical medium (optical fiber 2) for inputting only the first spectrally broadened light processed by the dispersion compensator to broaden a spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium, thereby obtaining second spectrally broadened light (page 5, paragraph [0078]).

Regarding claim 33, as similarly discussed above with regard to claims 30 and 31, Watanabe '965 discloses a system (Figure 8; page 5, paragraphs [0068]-[0070]) comprising:

a first optical fiber transmission line for transmitting signal light (i.e., the fiber on which signal pulse 4 enters the system shown in Figure 8);

an optical signal processing device for inputting the signal light transmitted by the first optical fiber transmission line; and

a second optical fiber transmission line (i.e., the fiber on which regenerated pulse 18 exits the system shown in Figure 8) for transmitting regenerated light output from the optical signal processing device;

the optical signal processing device comprising:

a first nonlinear optical medium (optical fiber 22) for inputting the signal light to broaden a spectrum of the signal light through self phase modulation occurring in the first nonlinear optical medium, thereby obtaining first spectrally broadened light (pages 5-6, paragraphs [0078] and [0080]);

a dispersion compensator (optical fiber 24) for compensating for chromatic dispersion effected on the first spectrally broadened light obtained by the first nonlinear optical medium (page 6, paragraphs [0079] and [0081]);

a second nonlinear optical medium (optical fiber 2) for inputting only the first spectrally broadened light processed by the dispersion compensator to broaden a spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium, thereby obtaining second spectrally broadened light (page 5, paragraph [0078]); and

an optical bandpass filter (bandstop filter 8) for inputting the second spectrally broadened light, having a passband whose center wavelength is different from a center wavelength of the second spectrally broadened light, thereby obtaining a signal component of the inputted light (bandstop filter 8 essentially comprises two passbands,

both of which have center wavelengths “different from a center wavelength of the second spectrally broadened light”; see Figure 5; page 4, paragraphs [0060]-[0062]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (EP 1056173 A2) in view of Watanabe (US 2001/0013965 A1).

For clarification, since both references cited in this rejection may be called “Watanabe,” the primary reference, EP 1056173 A2, is referred to as “Watanabe ’173,” and the secondary reference, US 2001/0013965 A1, is referred to as “Watanabe ’965” throughout this Office action.

Regarding claim 32, Watanabe ’173 discloses a system (Figure 7) comprising:

an optical coupler 30 for splitting signal light into first and second signal lights (column 12, lines 44-47 and 51-52);

an optical clock regenerator 34 for generating clock pulses according to the first signal light (column 12, lines 56-58; column 13, line 1); and

an optical AND circuit 36 for inputting the clock pulses and the second signal light to output converted signal light obtained by synchronization of the clock pulses and the second signal light (column 13, lines 1-5 and 13-17).

Watanabe ’173 further disclose that the converted signal light output from the optical AND circuit may be further processed by an optical signal processing device (Figure 10; column

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20, lines 56-58; column 21, lines 1-21), but Watanabe '173 does not specifically further disclose that the optical signal processing device comprises elements as recited in claim 32.

However, Watanabe '965 teaches a system that is related to the one disclosed by Watanabe '173, including optical signal processing devices for regenerating signals in an optical communications system. Watanabe '965 further teaches a optical signal processing device (Figure 8; page 5, paragraphs [0068]-[0070]) comprising:

a first nonlinear optical medium (optical fiber 22) for inputting signal light to broaden a spectrum of the signal light through self phase modulation occurring in the first nonlinear optical medium, thereby obtaining first spectrally broadened light (pages 5-6, paragraphs [0078] and [0080]);

a dispersion compensator (optical fiber 24) for compensating for chromatic dispersion effected on the first spectrally broadened light obtained by the first nonlinear optical medium (page 6, paragraphs [0079] and [0081]);

a second nonlinear optical medium (optical fiber 2) for inputting only the first spectrally broadened light processed by the dispersion compensator to broaden a spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium, thereby obtaining second spectrally broadened light (page 5, paragraph [0078]); and

an optical bandpass filter (bandstop filter 8) for inputting the second spectrally broadened light, having a passband whose center wavelength is different from a center wavelength of the second spectrally broadened light, thereby obtaining a signal component of the inputted light (bandstop filter 8 essentially comprises two passbands,

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both of which have center wavelengths “different from a center wavelength of the second spectrally broadened light”; see Figure 5; page 4, paragraphs [0060]-[0062]).

Regarding claim 32, it would have been obvious to a person of ordinary skill in the art further include an optical signal processing device as taught by Watanabe '965 to further process the signal output from the optical AND circuit and other elements disclosed by Watanabe '173 in order to further regenerate an optical signal as it is transmitted across long distances in the context of an optical network and thereby ensure that it is effectively received at its destination. Again, Watanabe '173 already discloses that a signal may be processed by a plurality of processing devices as needed (Figure 10; column 20, lines 56-58; column 21, lines 1-21).

Allowable Subject Matter

6. Claims 1-29 are allowed.

Response to Arguments

7. Applicant's arguments on pages 11-14 of the response filed 18 December 2006 with respect to claims 1-29 have been fully considered and are persuasive in light of the amendment to the claims also filed 18 December 2006. Claims 1-29 are allowed.

8. However, Applicant's arguments with respect to claims 30-33 on pages 14-15 of the response have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


CHRISTINA LEUNG
PRIMARY EXAMINER